

DISSOLVING CANDY CANES

INSTRUCTIONS

- STEP 1:** Measure and fill clear cups with each of the liquids you are using. Use the same amount for each liquid.
- STEP 2:** Measure the length of each candy cane before starting.
- STEP 3:** Predict what you think will happen to each candy cane in each of the liquids and write your predictions below.
- STEP 4:** Place a candy cane in each of the cups and start the timer.
- STEP 5:** Observe what happens to the candy cane in each liquid after 1 minute, 5 minutes and 10 minutes.
- STEP 6:** Record your results below.
- OPTIONAL:** Redo the experiment with a different candy!

SUPPLIES

Candy Canes

Liquids:

Cold Water

Hot Water

Vinegar

Oil

Clear cups

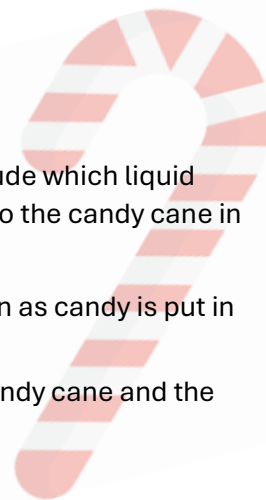
Timer (We love using our phone)

RECORD YOUR SCIENTIFIC RESULTS BELOW

	COLD WATER	HOT WATER	VINEGAR	OIL
PREDICTION <i>How will each candy cane react in each liquid?</i>				
Length of Candy Cane before				
Observations at 1 minute				
Observations at 5-minutes				
Observations at 10-minutes				
Length of Candy Cane after				

NOTES FOR EDUCATOR

- Adult supervision required when using hot water.
- Start with having each learner write down their predictions. Predictions can include which liquid they think will dissolve the candy cane the fastest and why, or what will happen to the candy cane in each liquid (color, smell, size).
- Some changes occur very quickly so be ready to help the learner observe as soon as candy is put in the liquids.
 - Observations can include changes to color, size and smell to both the candy cane and the liquids.
- Use discussion points below to explain why each liquid behaves differently.
- Redo experiment using different types of candy. Always start with a prediction before starting the experiment.
- You can also redo the experiment using candy canes and different liquids and temperatures such as soda pop, water/salt combo, water/corn starch combo or dish soap.



DISCUSSION POINTS (Spoilers Below)

Why Do Candy Canes Dissolve?

(Water vs Oil vs Vinegar)

Candy canes dissolve because they are mostly made of sugar! When sugar is placed in water, the sugar molecules interact with the water molecules. Water molecules surround and break apart the sugar molecules, pulling them away from the solid candy cane. As the sugar molecules are pulled apart, they disperse into the water, causing the candy cane to dissolve.

Candy canes do not dissolve in oil because sugar, the main ingredient in candy canes, is attracted to water molecules but not oil molecules. Oil and water are different types of solvents; and oil does not have the same type of molecular attraction to sugar molecules that water does. Because of this lack of attraction between sugar and oil, the sugar in candy canes doesn't dissolve in oil like it does in water. Instead, the candy cane remains intact in the oil.

Just like in water, the sugar in the candy cane will start to dissolve in vinegar, although the process might be slower. The acetic acid in vinegar can help break apart the sugar molecules, allowing them to dissolve, though it's not as efficient as water. So, in vinegar, the candy cane will likely dissolve more slowly than in water, and its texture and taste might change due to the acidic nature of vinegar.

(Hot vs Cold Water)

Candy canes dissolve faster in hot water compared to cold water due to the effect of temperature on molecular movement. When water is heated, the molecules move faster because they have more energy. In hot water, the faster-moving water molecules collide with the sugar molecules more often and with greater force, which helps to dissolve the candy cane more quickly. In contrast, cold water molecules move more slowly, meaning they interact with the sugar molecules less frequently and with less energy, which results in a slower dissolution process.